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EXAMINER

DANIELS, MATTHEW J

ART UNIT	PAPER NUMBER
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1732

DATE MAILED: 07/25/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/800,505	Applicant(s) BRISTOW ET AL.	
	Examiner Matthew J. Daniels	Art Unit 1732	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 May 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-3, 5, 9-15, 20, 23-25, 27, 29, 30 and 33-48 is/are pending in the application.
- 4a) Of the above claim(s) 35-48 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☐ Claim(s) 1-3, 5, 9-15, 20, 23-25, 27, 29, 30, 33 and 34 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. In the claims:

Claims 1-3,5,9-15,20,23-25,27,29,30 and 33-48 are pending

Claims 1-3, 13, 25, 27, 30 are currently amended.

Claims 35-48 are withdrawn.

Drawings

2. The objection to the drawings is withdrawn in view of Applicant's arguments on pages 14 and 15 of the 5 May 2006 reply.

Claim Rejections - 35 USC § 112

3. The rejection of Claims 23-25, 27, and 29 set forth previously under this section is withdrawn in view of the change of "consisting" to "comprised".

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Rejections set forth previously under this section are withdrawn in view of the amended claims.

5. **Claims 1, 5, 9-12, 20** are rejected under 35 U.S.C. 103(a) as being unpatentable over Holtrop (USPN 4,529,641) in view of van Damme et al (Reinforced Plastics, July/August 1999, pages 48-50), Provan (USPN 5267827), Byma (USPN 6,322,658 B1), Breezer (USPN 5,635,129), Steward (USPN 4,211,590), and Haardt (USPN 5,180,628). **As to Claim 1**, Holtrop teaches a thermoforming process for forming headliners (5:24) comprising the steps of:

transferring a sheet to a thermoforming mold which would have obviously had matched mold halves (4:16-24)

transferring a cover stock material to the thermoforming mold (4:17)

compressing and fusing the sheet and cover stock to form a compression molded first headliner part (4:16-24).

transferring the compression molded first part to a second mold and positioning in half of a vacuum thermoforming mold (4:51-5:28).

transferring the second sheet onto an opposing half mold of the vacuum thermoforming mold, vacuum molding the second sheet forming a vacuum molded second headliner part (4:51-5:28).

compressing the half molds of the thermoforming mold fusing regions of the compression molded covered headliner part to the second headliner part (4:64-68).

forming a covered unified part consisting of the compression molded covered first headliner part and a vacuum molded second headliner art, where the covered unified part has at least one interior compartment, which would have obviously had head impact cushioning.

Holtrop appears to be silent to:

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a) first and second sheets that are a low pressure, thermoformable, thermoplastic composite comprised of polypropylene and long chopped glass fibers, b) an oven for heating the first and second sheets to predetermined temperatures, c) frames holding the first and second sheets, d) “matched” mold halves, e) repeating the process until a sufficient number of compression molded covered headliner parts are formed, f) removing the matched mold halves and setting up for vacuum thermoforming with a lower mold half and an opposing half mold, g) thermoforming the second sheet onto half molds prior to fusing regions of the headliner parts, h) the interior compartment having impact cushioning, i) ejecting the unified part.

However, these aspects would have been prima facie obvious for the following reasons:

a) van Damme teaches a first sheet that is a low pressure, thermoformable, thermoplastic composite comprised of polypropylene and long chopped glass fibers (page 48, left column), a material that is explicitly suggested to be used for compression moulding, low pressure forming, or vacuum forming of headliners (page 48, left column, page 50, left column). Note that van Damme teaches the same material (Azdel Superlite) as used in the instant Abstract, thus all properties of the sheets are believed to constitute inherent aspects of van Damme’s sheets. Haardt teaches both first and second sheets comprised of polypropylene and reinforcing agents (2:35-39).

b) Byrna teaches an oven (3:66) for heating a first and second sheet to predetermined temperatures (Fig. 4) for thermoforming headliner parts to obtain optimal compression and bonding of the layers (2:1-4).

c) Steward teaches (6:40-49) use of tenter frames during a preheating step prior to thermoforming a headliner to avoid shrinkage and surface irregularities.

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d) The Examiner asserts that Holtrop teaches lamination, and it would have been prima facie obvious to provide flat plates, which would be “matched” to cause Holtrop’s lamination (4:16-24).

e and f) Provan teaches that it is conventional to provide a variety of products on a batch run basis, and that by providing a modular nature to the apparatus, it becomes particularly well suited to thermoforming operations in which the molds are changed out from time to time. By doing so, Provan teaches that it is desirable to have modular molds that can be removed and set up for another operation after providing a sufficient number of parts.

g) Breezer teaches a thermoform process comprising holding a second sheet along its edges (Fig. 6, Item 30); heating the second sheet (3:49); transferring and molding the second sheet onto an opposing half mold of the vacuum thermoforming mold forming a second part (3:48-50); and then compressing the half molds of the thermoforming mold fusing regions of the first part to the second part (3:50-54), thereby forming a unified part having at least one interior compartment (Fig. 6). Also note Holtrop’s teaching of

h) The Examiner submits that Holtrop’s interior compartment would have obviously had impact cushioning, particularly when combined with the same Azdel SuperLite of van Damme, as also used in the instant application.

i) Haardt teaches ejecting a composite laminate part (4:55-56).

One would have been motivated to combine the methods taught by van Damme, Byma, Steward, Provan, Breezer, and Haardt, with the twin-sheet thermoforming process taught by Holtrop because van Damme specifically suggests it (page 48, left column, page 50, left column), in order to produce a headliner with improved acoustic properties as taught by Holtrop,

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optimal bonding of the laminate layers as taught by Byma, without shrinkage and surface irregularities as taught by Steward, the ability to produce a variety of products by using a modular molds with a single apparatus as taught by Provan, providing a part with increased thickness as taught by Breezer for improved cushioning, and reduced danger to the laborer by ejecting the part rather than removing it manually as in the method of Haardt.

As to Claims 2 and 3, Haardt teaches both first and second sheets comprised of polypropylene and reinforcing agents (2:35-39). Although Haardt is silent to the second sheet that is a “low pressure composite has a flexural modulus of about 900 MPa to about 1800 MPa as determined by ASTM D792,” van Damme teaches a laminate that would have obviously fulfilled the claimed conditions (pages 48-50) because it is the same as used in this application. It would have been prima facie obvious to one of ordinary skill in the art at the time of the invention to incorporate these aspects of the method of van Damme and Haardt into that of Holtrop because Holtrop teaches that recent efforts are directed at fiberglass (1:39), and van Damme specifically suggests incorporation into headliners (page 50, left column), and reinforcing both sheets as in Haardt’s method would improve the impact absorption and cushioning. **As to Claim 5**, Holtrop teaches a second headliner part that is further comprised of a layer of fusing adhesive (3:59-61 and 4:16-20 and 4:33-35). **As to Claim 9**, Holtrop teaches a cloth (3:62) and a fabric (4:17) cover stock material, which the Examiner interprets to be the same as a felt. **As to Claim 10**, Holtrop teaches a cover stock with an underlying layer of foam (4:17-18). **As to Claim 11**, Holtrop further teaches an interlayer adhesive (3:59-63 and 4:16-24) to promote the adhesion of the fabric and foamed thermoplastic sheet. **As to Claim 12**, Holtrop teaches (4:33-50) adhesives on the inner surfaces of headliner parts and fusing by thermoforming to produce an adhesively

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laminated covered unified part (4:16-66). **As to Claim 20**, Holtrop teaches a headliner (5:24). **As to Claims 23 and 24**, Holtrop teaches the compression forming of the laminates, Breezer teaches the vacuum molding, and Holtrop also teaches injecting foam, which would have obviously acted as insulation (5:15-21). **As to Claims 25 and 27**, both of Holtrop's laminates are compression molded and have a scrim (4:16-32). Van Damme clearly suggests the desirable benefits of the SuperLite material, as disclosed in the Abstract of this application, in headliners. Breezer teaches vacuum forming prior to adhering the two laminates. Holtrop also teaches injecting foam, which would have obviously acted as insulation (5:15-21). **As to Claim 29**, Holtrop's foam would have obviously enhanced the acoustics of the headliner (5:15-28). **As to Claims 33 and 34**, Steward teaches (6:40-49) use of tenter frames during a preheating step prior to thermoforming a headliner to avoid shrinkage and surface irregularities, and Byma teaches an oven (3:66) for heating a first and second sheet to predetermined temperatures (Fig. 4) for thermoforming headliner parts to obtain optimal compression and bonding of the layers (2:1-4). Providing these treatments to both sheets would have been prima facie obvious.

6. **Claims 13-15** are rejected under 35 U.S.C. 103(a) as being unpatentable over Holtrop (USPN 4,529,641) in view of Byma (USPN 6,322,658 B1), Breezer (USPN 5,635,129), Steward (USPN 4,211,590), Haardt (USPN 5,180,628) and Provan (USPN 5,267,827). **As to Claim 13**, Holtrop teaches a thermoforming process for forming headliners (5:24) comprising the steps of:

transferring a sheet to a thermoforming mold which would have obviously had matched mold halves (4:16-24) .

transferring a cover stock material to the thermoforming mold (4:17)

compressing and fusing the sheet and cover stock to form a compression molded first headliner part (4:16-24).

transferring a reinforcing scrim to the second sheet, forming a compression molded scrim reinforced second headliner part (2:30-32 and 4:16-32)

compressing and fusing the reinforcing scrim to a thermoforming mold which would have obviously had matched mold halves, forming a compression molded scrim reinforced second headliner part (4:51-68)

transferring and positioning the compression molded scrim reinforced second headliner part to the opposing half mold of the thermoforming mold (4:51-68)

compressing the half molds of the thermoforming mold fusing regions of the compression molded covered first headliner art to the compression molded scrim reinforced second headliner part, forming a reinforced covered, unified part consisting of a compression molded covered first part and a compression molded scrim reinforced second part having at least one interior compartment.

Holtrop appears to be silent to:

a) an oven for heating the first and second sheets to predetermined temperatures, b) frames holding the first and second sheets, c) “matched” mold halves, d) thermoforming the second sheet onto half molds prior to fusing regions of the headliner parts, e) repeating the process to produce a sufficient number of parts, f) removing the matched mold halves and “setting up” for vacuum thermoforming, g) the interior compartment having impact cushioning, h) ejecting the unified part.

However, these aspects would have been prima facie obvious for the following reasons:

- a) Byrna teaches an oven (3:66) for heating a first and second sheet to predetermined temperatures (Fig. 4) for thermoforming headliner parts to obtain optimal compression and bonding of the layers (2:1-4).
- b) Steward teaches (6:40-49) use of tenter frames during a preheating step prior to thermoforming a headliner to avoid shrinkage and surface irregularities.
- c) The Examiner submits that Holtrop teaches lamination, and it would have been prima facie obvious to provide flat plates, which would be “matched” to cause Holtrop’s lamination (4:16-24).
- d) Breezer teaches a thermoform process comprising holding a second sheet along its edges (Fig. 6, Item 30); heating the second sheet (3:49); transferring and molding the second sheet onto an opposing half mold of the vacuum thermoforming mold forming a second part (3:48-50); and then compressing the half molds of the thermoforming mold fusing regions of the first part to the second part (3:50-54), thereby forming a unified part having at least one interior compartment (Fig. 6).
- e and f) Provan teaches that it is conventional to provide a variety of products on a batch run basis, and that by providing a modular nature to the apparatus, it becomes particularly well suited to thermoforming operations in which the molds are changed out from time to time. By doing so, Provan teaches that it is desirable to have modular molds that can be removed and set up for another operation after producing a sufficient number of parts.
- g) The Examiner submits that Holtrop’s interior compartment would have obviously had impact cushioning.
- h) Haardt teaches ejecting a composite laminate part (4:55-56).

One would have been motivated to combine the methods taught by Byma, Steward, Breezer, and Haardt, with the twin-sheet thermoforming process taught by Holtrop in order to produce a headliner with improved acoustic properties as taught by Holtrop, optimal bonding of the laminate layers as taught by Byma, without shrinkage and surface irregularities as taught by Steward, providing a part with increased thickness as taught by Breezer for improved cushioning, having the ability to produce a variety of products by using a modular molds with a single apparatus as taught by Provan, and reduced danger to the laborer by ejecting the part rather than removing it manually as in the method of Haardt. **As to Claim 14**, Holtrop teaches an underlying layer of foam (4:17-18). **As to Claim 15**, Holtrop teaches (4:33-50) adhesives on the inner surfaces of headliner parts and fusing by thermoforming to produce a covered unified part (4:64-66).

7. **Claim 29** is rejected under 35 U.S.C. 103(a) as being unpatentable over Holtrop (USPN 4,529,641) in view of van Damme et al (Reinforced Plastics, July/August 1999, pages 48-50), Provan (USPN 5267827), Byma (USPN 6,322,658 B1), Breezer (USPN 5,635,129), Steward (USPN 4,211,590), and Haardt (USPN 5,180,628), and further in view of Strapazzini (USPN 5,529,742). Holtrop, van Damme, Byma, Breezer, Steward, and Haardt teach the subject matter of Claim 1. **As to Claim 29**, Strapazzini teaches a vacuum forming (4:28) method for forming plastic molded panels with inserts wherein objects such as wires and duct work (2:14) are molded within the thin plastic sheet blanks. Holtrop teaches covered unified parts (4:1-68). Strapazzini also teaches integral portions configured to receive or mount exterior mechanical parts or trim elements (2:15-18). The Examiner interprets these to be fasteners. It would have

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been prima facie obvious to one of ordinary skill in the art at the time of the invention to incorporate the elements taught by Strapazzini in the method of Holtrop in order to provide acoustic improvements and to hide items such as wiring and fasteners from view and thereby provide a more pleasing appearance to the headliner.

8. **Claim 30** is rejected under 35 U.S.C. 103(a) as being unpatentable over Holtrop (USPN 4,529,641) in view of van Damme et al (Reinforced Plastics, July/August 1999, pages 48-50), Provan (USPN 5267827), Byma (USPN 6,322,658 B1), Breezer (USPN 5,635,129), Steward (USPN 4,211,590), and Haardt (USPN 5,180,628), and further in view of Ozeki (USPN 6080469). **As to Claim 30**, Holtrop is silent to the specific finishing treatments sought by Applicant. Ozeki teaches at least punching and trimming (14:35-40). It would have been prima facie obvious to one of ordinary skill in the art at the time of the invention to include the method of Ozeki, namely a step of punching and trimming, into that of Holtrop in order to improve the overall appearance of the headliner, to remove it from the framed sheets, and make it fit into the vehicle.

Response to Arguments

9. Applicant's arguments filed 5 May 2006 have been fully considered but they are not persuasive. The arguments appear to be on the following grounds:

a) Lamination, which Holtrop teaches, is not molding. The Examiner asserts that it would be prima facie obvious to provide flat plates, which would cause Holtrop's lamination. In essence, the Examiner is admitting that the lamination of Holtrop is not compression molding.

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- b) There is no disclosure of the new step of changing out the molds
- c) There is no teaching of the head impact properties
- d) In Holtrop's method, the thermoforming mold is closed, adhering the adhesive zones, then pressurizing with air. Holtrop can't change this sequence because pressurization can't be done until the mold is closed.
- e) Applicant claims in Claim 5 that only the second part has an adhesive coating
- f) Applicant claims in Claim 9 a variety of materials, but does not state that these would be allowable if written in dependent form.
- g) Applicant does not claim a foam on both sides, as disclosed by Holtrop
- h) In response to the rejection of Claim 12, Holtrop teaches a foam, not a thermoplastic composite
- i) Holtrop's material is not a headliner, but a material that can be formed into a headliner by twin sheet thermoforming.
- j) Regarding Claims 23 and 24, Holtrop only shows a slightly deformed flat sheet, and does not mention compression molding to laminate the cloth to the foam. Holtrop teaches rollers at 3:51, and this teaching has been intransigently ignored in favor of a hypothetical scenario of flat plates.
- k) Regarding Claims 25 and 27, because of the dependency on Claim 13, these claims are believed to be allowed.
- l) The Examiner admits that both van Damme and Haardt are silent to the claimed flexural modulus. The van Damme reference appears to be more of a "What if scenario" speculating on possible applications. The van Damme reference is not enabling.
- m) Amended Claim 13 includes the step of setting up a mold.

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- o) Holtrop fuses the parts as the first step prior to forming any interior compartment, and therefore is not combinable with Strapazzini's teaching of integral portions to receive parts.
- p) Water jet cutting has been deleted.

10. These arguments are not persuasive for the following reasons:

a and j) The Applicant's remarks appear to indicate that Holtrop clearly teaches laminating with rollers, and that there is no suggestion of flat plates. The portion cited by Applicant's remarks (3:51) teaches removing excess solution from a fabric, and does not, as Applicant asserts, provide teaching as to the bonding of the two materials. The Examiner asserts that "a hot surface...can be pressed on the fabric" (4:21-22) teaches or suggests a plate for giving shape to the composite. The Examiner has found no particular definition for "matched mold halves" in the specification, and asserts that two flat plates are obviously matched, and are interpreted to be molds. No further limitations are present which distinguish the shape of the molded article from a flat sheet.

b) This limitation is believed to be addressed by the new claim rejection.

c and l) Applicant bears the burden of showing that van Damme does not inherently provide these qualities, however, it must be noted that the SuperLite material of van Damme is the same as Applicant sets forth in the abstract, and the Examiner asserts that van Damme clearly suggests that the material be used in headliners.

d) The Examiner asserts that Holtrop's teaching of using vacuum in the mold cavities to perform twin sheet thermoforming (which appears in the title of this application) reads on the instant

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invention, and in the alternative, there is no evidence that any rearrangement of these steps would provide a different process, result, or benefit.

e) The claim does not exclude other adhesives.

f) The Examiner notes the word “or” which requires that only one element be present, and Applicant appears to concede that at least one element is present. Additionally, as functional equivalents that would not provide, or have not been shown to provide, any material difference to the *process* over the fabric or felt that is taught by the reference, the Examiner maintains that these elements would also be obvious.

g) The claim does not appear to exclude the configuration of Holtrop.

h) The new combination is addressed by the incorporation of van Damme into the rejection of Claim 1.

i) This argument appears to be drawn to an asserted lack of teaching of the finishing steps. The Examiner maintains his position that Holtrop forms a headliner. However, in the alternative, because Holtrop clearly suggests the invention for a headliner, it is also suggestive of the additional finishing steps that would be needed to bring it to that desired condition.

k) By their dependency on rejected Claim 13 and the additional rejection of these claims, these claims are rejected.

m) This rejection is believed to be addressed by the new rejections, which teach the obvious benefits of modularity.

o) The arguments do not appear to consider Holtrop’s teaching of vacuum to expand the sheets. The Examiner asserts that there is no destruction or teaching away from Holtrop’s method. Additionally, Holtrop teaches that in some cases adhesive can be excluded (5:9-14), and that

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bonding can occur only through heat provided during the thermoforming process. In this process, it would have been obvious to vacuum thermoform first to provide only the desired points of contact for bonding, instead of a continuous contact across the surfaces of the sheets.

p) See the rejections above. The other claimed cutting methods are also conventional.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Matthew J. Daniels whose telephone number is (571) 272-2450. The examiner can normally be reached on Monday - Friday, 8:00 am - 5:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Christina Johnson can be reached on (571) 272-1176. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

MJD 7/21/06


CHRISTINA JOHNSON
PRIMARY EXAMINER

7/21/06